

MPE Analysis Report

The Equipment-Under-Test (EUT) BTC-9D is a Hunting Camera. The EUT contains a WIFI (b/g/n) and a Bluetooth 4.0 BLE modules. The EUT is powered by 12.0VDC (4 x 3.0V "CR2032" batteries). The video can be transferred via WIFI or micro USB port to Smartphone or PC. The Bluetooth portion is for the connection between the EUT and Apps. An iOS/Android Apps installed in Smartphone can act as the remote control of the EUT.

WIFI and BLE mode cannot be operated simultaneously.

For Bluetooth 4.0 module:

For Bluetooth 4.0 BLE mode, it occupies a frequency range from 2402MHz to 2480MHz (40 channels with channel spacing of 2MHz). It transmits via GFSK modulation.

Bluetooth Module

Antenna Type: Internal, Integral

Antenna Gain: 2.555dBi

Operating mode	Nominal Radiated Power	Production Tolerance
Bluetooth 4.0 BLE	105.9 dBμV/m at 3m	+/- 3dB

For Maximum Permissible Exposure (MPE) evaluation of the BTC-9D, the maximum power density at 20 cm from this mobile transmitter shall be less than the General Population / Uncontrolled MPE limit in OET Bulletin 65.

For the Bluetooth 4.0 BLE, maximum field strength measured within its production tolerance was 108.9 dBμV/m (maximum). The distance (D) between the antenna and the equipment under test (EUT) was 3 meters. And the maximum source-based time-averaging duty factor is 100%. From these data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna can be calculated according to OET Bulletin 65 as follow

The radiated power = $(FS \cdot D)^2 / 30 = 23.3 \text{ mW}$

The radiated (EIRP) source-based time-averaging output power
= $(23.3 \cdot 1) \text{ mW}$
= 23.3 mW

The power density at 20 cm from the antenna
= $EIRP / 4\pi R^2$
= 0.0046 mW cm⁻²

In the frequency range of 1,500 - 100,000MHz, the MPE limit is 1.0 mWcm⁻² for general population and uncontrolled exposure. As the measured power density at 20cm from the transmitter is lower than the MPE limit, the compliance to the MPE limit can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structures and body of the user or nearby persons. The following RF exposure statement is proposed to be included in the user manual:

“ FCC RF Radiation Exposure Statement

Caution: To maintain compliance with the FCC's RF exposure guidelines, place the product at least 20cm from nearby persons.”